

Notice of Allowability

Application No.

10/523,867

Applicant(s)

KATSEVICH, ALEXANDER

Examiner

John M. Corbett

Art Unit

2882

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 1 September 2006.
2. ☒ The allowed claim(s) is/are 1-6, 8 and 10-34.
3. ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some* c) ☒ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
- (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
- 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
- (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|--|---|
| 1. <input type="checkbox"/> Notice of References Cited (PTO-892) | 5. <input type="checkbox"/> Notice of Informal Patent Application |
| 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 6. <input type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date _____ |
| 3. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____ | 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment |
| 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance |
| | 9. <input type="checkbox"/> Other _____ |

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Phyllis Wood on January 3, 2007.

The application has been amended as follows:

In claim 1, line 11, delete "and".

In claim 1, line 14, replace the period with --; and--.

In claim 1, line 15, insert --displaying the reconstructed image.--.

In claim 2, line 1, replace "single" with --at least one--.

In claim 3, line 1, replace "single" with --at least one--.

In claim 3, line 3, insert a period at the end of the line.

In claim 4, line 1, replace "single" with --at least one--.

In claim 10, line 7, replace "if the" with --when an--.

In claim 10, line 8, insert --and-- at the end of the line.

In claim 10, line 9, replace "if" with --when--.

In claim 10, line 20, delete "and".

In claim 10, line 21, replace the period with --; and--.

In claim 10, line 22, insert --(f) displaying the reconstructed image.--.

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In claim 14, line 5, replace "If" with --when--.

In claim 14, line 6, replace ". If" with --and when--.

In claim 14, line 8, replace "here" with --wherein--.

In claim 14, line 10, insert --and-- at the end of the line.

In claim 16, line 7, replace "if the" with --when an--.

In claim 16, line 9, insert --and-- at the end of the line.

In claim 16, line 10, replace "if" with --when--.

In claim 16, line 16, replace "here" with --wherein--.

In claim 16, line 22, delete "and".

In claim 16, line 23, replace the period with --; and--.

In claim 16, line 24, insert --(f) displaying the reconstructed image.--.

In claim 24, line 5, replace "If" with --when--.

In claim 24, line 6, replace ". If" with --and when--.

In claim 24, line 9, replace "I(x)" with --I(x) is--.

In claim 24, line 10, insert --and-- at the end of the line.

In claim 26, line 7, delete "and".

In claim 26, line 10, replace the period with --; and--.

In claim 26, line 11, insert --displaying the reconstructed image.--.

In claim 34, line 1, replace "images derived" with --images of a scanned object derived--.

In claim 34, line 6, replace "reconstruct an image" with --reconstruct an exact image--.

In claim 34, line 12, replace "use that portion" with --using those portions--.

In claim 34, lines 13-14, replace “which is on one side of $y_L(x)$, and very limited amount of the line scan cone beam data, which is on the other side of $y_L(x)$,” with “--which are on each side of $y_L(x)$ --.”

In claim 34, lines 15-16, replace “, where image reconstruction is desired.” with “; and--.”

In claim 34, line 17, insert “--displaying the reconstructed image.--.”

REASONS FOR ALLOWANCE

2. Claims 1-6, 8, 10-34 are allowed.

The following is an examiner’s statement of reasons for allowance.

With respect to claim 1, the prior art does not teach or fairly suggest a method including the step of:

applying a convolution based shift invariant Filtered Back Projection (FBP) algorithm to both the at least one curve within the plane and the line transversal to the plane of the at least one curve, when taken in combination with all other elements in the claim. Claims 2-6 and 8 are allowed by virtue of their dependency.

With respect to claim 10, the prior art does not teach or fairly suggest a method including the steps of:

identifying lines on a plane π intersecting the cone beam, wherein the step of identifying lines includes the steps of:

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(a) when an x-ray source belongs to the line scan, project the planar curve scan onto π and choose a discrete set of lines tangent to that projection; and

(b) when the x-ray source belongs to the planar curve scan, project the planar curve scan onto π and choose a discrete set of lines parallel to that projection,

when taken in combination with all other elements in the claim. Claims 11-15 are allowed by virtue of their dependency.

With respect to claim 16, the prior art does not teach or fairly suggest a method including the steps of:

identifying lines on a plane π intersecting the cone beam, wherein the step of identifying lines includes the steps of:

(a) when an x-ray source belongs to the line portion of the scan, project the planar curve portion of the scan onto π and choose a set of lines tangent to that projection; and

(b) when the x-ray source belongs to the planar curve portion of the scan, project the planar curve portion of the scan onto π and choose a set of lines parallel to that projection,

when taken in combination with all other elements in the claim. Claims 17-25 are allowed by virtue of their dependency.

With respect to claim 26, the prior art does not teach or fairly suggest a method including the step of:

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applying a convolution based shift invariant Filtered Back Projection (FBP) algorithm to both the planar curved scan and the line scan, when taken in combination with all other elements in the claim. Claims 27-33 are allowed by virtue of their dependency.

With respect to claim 34, the prior art does not teach or fairly suggest a method including the step of:

backprojection updating the image of the scanned object to reconstruct an exact image of the scanned object with the convolution based shift invariant FBP algorithm, wherein the step of backprojection includes:

identifying a line segment containing the point x , whose one endpoint $y_c(x)$ is on the curve scan, and the other endpoint $y_l(x)$ is on the line scan; and

for image reconstruction at x using those portions of the line scan cone beam data, which are on each side of $y_l(x)$,

when taken in combination with all other elements in the claim.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John M. Corbett whose telephone number is (571) 272-8284. The examiner can normally be reached on M-F 8 AM - 4:30 PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward J. Glick can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

5 January 2007

JMC

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EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER